

CLAIMS

What is claimed is:

1. A method for forming an image, the method comprising the steps of:

5 a) imaging an imageable element with ultraviolet radiation, the imageable element comprising an imageable layer over a support, and forming an imaged imageable element comprising imaged and complementary unimaged regions in the imageable layer; and

b) developing the imaged imageable element with a developer and removing the unimaged regions without removing the imaged regions;

10 in which:

the imageable layer comprises an acid generator, a crosslinking agent, and a binder;

the acid generator is an iodonium, sulfonium, or diazonium salt in which the anion is an organic sulfate anion or an organic thiosulfate anion;

15 the crosslinking agent comprise at least two acid-activatable reactive groups;

the binder comprises a polymer that contains a reactive pendent group capable of undergoing acid-catalyzed crosslinking with the crosslinking agent, in which the reactive pendent group is selected from the group consisting of hydroxyl, carboxylic acid, sulfonamide, alkoxymethyl, and mixtures thereof; and

20 the developer is a solvent based developer.

2. The method of claim 1 in which imaging is direct digital imaging.

3. The method of claim 1 in which the reactive pendent group is an alkoxymethyl group.

25 4. The method of claim 3 in which the alkoxy group of the alkoxymethyl group has one to four carbon atoms.

5. The method of claim 4 in which the binder is a copolymer that comprises, in polymerized form, an alkoxymethyl amide monomer selected from the group consisting of N-methoxymethyl methacrylamide, N-ethoxymethyl methacrylamide, N-*n*-propoxymethyl methacrylamide, N-*iso*-propoxymethyl methacrylamide, N-*n*-butoxymethyl methacrylamide, N-*sec*-butoxymethyl methacrylamide, N-*tert*-butoxymethyl methacrylamide, and N-*iso*-butoxymethyl methacrylamide.
6. The method of claim 4 in which the acid generator is a diazonium salt.
7. The method of claim 6 in which the anion of the diazonium salt is an organic sulfate anion.
8. The method of claim 7 in which the crosslinking agent is a resole resin.
9. The method of claim 8 in which the cation of the diazonium salt is a 2-methoxy-4-(phenylamino)-benzenediazonium cation.
10. The method of claim 1 in which the binder additionally comprises a novolac resin, novolac resin derivitized with a polar group, or a mixture thereof.
11. The method of claim 10 in which the acid generator is a diazonium salt.
12. The method of claim 11 in which the crosslinking agent is a resole resin.
13. The method of claim 12 in which:
- the acid generator is a diazonium salt anion in which the anion of the diazonium salt is an organic sulfate anion and the cation of the diazonium salt is a 2-methoxy-4-(phenylamino)-benzenediazonium cation; and
- the crosslinking agent is a resole resin.
14. The method of claim 1 additionally comprising, after step a) and before step b), the step of heating the imaged imageable element.
15. The method of claim 14 in which the imageable layer additionally comprises a colorant.

16. The method of claim 14 in which the reactive pendent group is an alkoxymethyl group in which the alkoxy group has one to four carbon atoms.

17. The method of claim 15 in which the crosslinking agent is a resole resin.

5 18. The method of claim 17 in which about 20 mJ/cm² or less of imaging energy is used in step a).

19. The method of claim 18 in which the acid generator is a diazonium salt in which the anion of the diazonium salt is an organic sulfate anion and the cation of the diazonium salt is a 2-methoxy-4-(phenylamino)-benzenediazonium cation.

10 20. The method of claim 19 in which the binder is a copolymer that comprises, in polymerized form, an alkoxymethyl amide monomer selected from the group consisting of N-methoxymethyl methacrylamide, N-ethoxymethyl methacrylamide, N-*n*-propoxymethyl methacrylamide, N-*iso*-propoxymethyl methacrylamide, N-*n*-butoxymethyl methacrylamide, N-*sec*-butoxymethyl methacrylamide N-*tert*-butoxymethyl methacrylamide, and N-*iso*-butoxymethyl methacrylamide.
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21. The method of claim 19 in which about 10 mJ/cm² or less of imaging energy is used in step a).

22. The method of claim 21 in which the binder additionally comprises a
20 novolac resin, novolac resin derivitized with a polar group, or a mixture thereof.

23. The method of claim 22 in which the novolac resin and novolac resin derivitized with a polar group together comprise about 0.5 wt% to about 10 wt% of the imageable layer.

24. The method of claim 23 in which the reactive pendent group is an
25 alkoxymethyl group in which the alkoxy group has one to four carbon atoms.

25. The method of claim 24 in which the crosslinking agent is a resole resin.

26. The method of claim 25 in which the acid generator is a diazonium salt

and the anion of the diazonium salt is an organic sulfate anion.

27. The method of claim 26 in which about 20 mJ/cm² or less of imaging energy is used in step a).

28. The method of claim 27 in which the cation of the diazonium salt is a
5 2-methoxy-4-(phenylamino)-benzenediazonium cation.

29. The method of claim 28 in which about 10 mJ/cm² or less of imaging energy is used in step a).

30. The method of claim 1 in which about 10 mJ/cm² or less of imaging energy is used in step a).

10 31. The method of claim 1 in which about 5 mJ/cm² to about 6 mJ/cm² of imaging energy is used in step a).